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ON THE APPLICATION OF CYLINDRICAL GLASSES IN MYOPIC ASTIGMATISM.

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In the August number of the AMERICAN JOURNAL OF OPHTHALMOLOGY, page 181, I published an article on "The Use of Cylindrics in Spasmodic Myopic Astigmatism." *This* paper relates to a form of *non-spasmodic* myopic astigmatism and its correction with glasses.

In the first communication there are several errors, one of which should be noticed. On page 183, August number of this journal, the dotted lines, g, g, a′ a′, are made in Fig. 2 to cross between the lines f. c., whereas *these* should have been represented as coming to a focus on the line c, at g,′ not g, or upon the retina. The figures in that will be referred to in this article.

Given a case of axial myopic astigmatism = D 1.5 in the vertical meridian, how shall glasses be applied to correct the ametropia in proximal vision? In many instances a + cylinder will correct this, its *axis* placed at right angles to *that* found proper in the correction with the negative cylinder in *vision remotum*. In this case — D 1.5 c, axis 180°, gives V = D ¼, S. remotum. With this glass, however, vision proximum is not per-

fect, and the asthenopia continues still and due to spasm of accommodation.

In the *vertical* plane refraction is in excess, and when this is diminished by the—D 1.5 c axis 180°, the horizontal and vertical planes are harmonious in vision remotum, but not so in proximal sight with *this* glass.

As the object is approximated to the eye (see i, Fig. 4) in

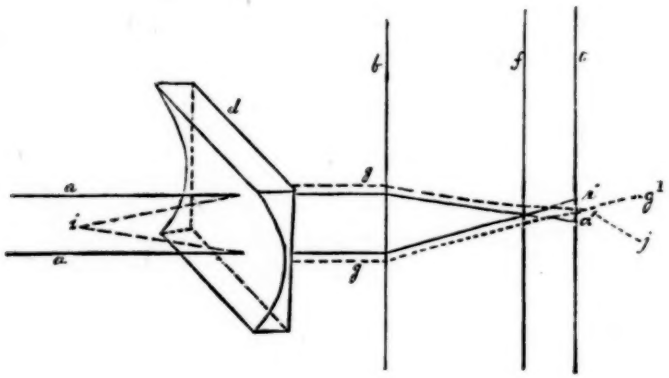

FIG. 4.

near vision, the divergent rays, i, g, g, will tend to focus behind the retina or at j; to overcome this tendency the fibres of the ciliary muscle bearing upon, or which actuate, the vertical planes of the eye must act with increased force=D 1.5, in this case, and greater than the force exercised in the horizontal plane, in order to overcome the presence of *the* negative cylinder, axis 180°, and maintain the focus upon the retina on the line c, Fig. 4. This increased action of the muscle fibres actuating the *vertical* planes will also cause the muscle fibres which act upon the *horizontal* planes to put forth greater power and hence the focus in the *horizontal* meridian will be advanced = D 1.5 and fall upon the line f, Fig. 4 which meridian has now become myopic in near vision, while at the same time the vertical planes have their focus upon the line c, or the retina. By *this*—glass the myopia in proximal vision has been simply transferred from one to the other plane, and the foci of the two planes are not of the same length.

If now the negative cylinder be discarded and a + D 1.5 c axis 90° be applied in proximal vision the rays in the *horizontal* plane will be brought forward to the line f, Fig. 5, *artificial* myopia will be induced in the *horizontal* meridian, the original

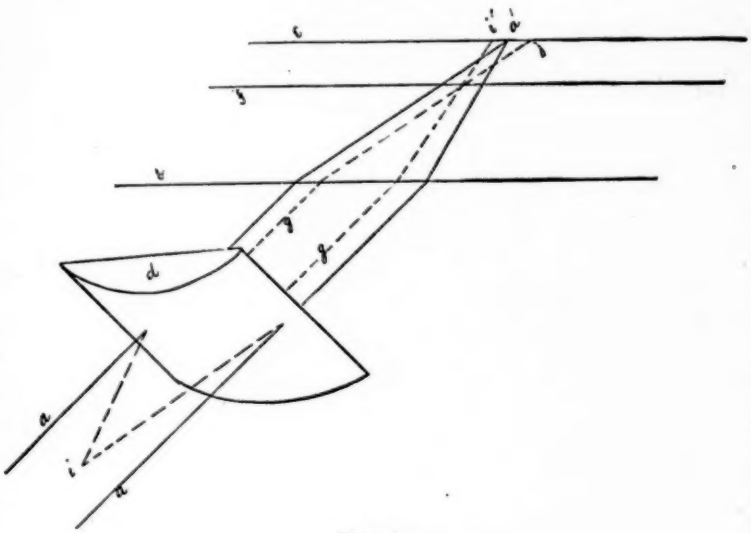

FIG. 5.

myopia in the *vertical* plane will be maintained, and the foci in both meridians will fall upon the line f, Fig. 5. On approaching the object to i, Fig, 5, the diverging rays i, g, g, will be cast upon the retina at a′, and all the meridians of the eye in near-vision will be perfect and ciliary asthenopia relieved.

A case is added in illustration of the foregoing:

Miss L. H. B., æt. 28 years, has unaided R. V. = D $\frac{4}{24}$; L. V. = D $\frac{4}{12}$., S. remotum; and R. V. = $\frac{6}{15}$ $\frac{}{.24}$ D.; L. V. $\frac{6}{17}$ $\frac{}{.24}$ D. S. proximum.

With the prisoptometer she requires, without mydriatic and with duboisine, — D 1.5 c, axis 15° R. E., and the same glass axis 165° L. E..

With these glasses, both before and after the use of the mydriatic, V, each eye, = D $\frac{4}{12}$. and V 2 = D $\frac{4}{5}$ S. She can read S. D 0.6 but not distinctly with these glasses in near vision. But

when + D 1.5 c, axis 105°, R. E., and the same glass, axis 75°, L. E. is applied, vision is perfect in either eye, and $V_2 = D \frac{6}{.14-.28}$ Snellen; but she cannot, with these glasses see well in the distance, and they were ordered for near vision only, as she wishes to read and sew, and to have freedom from asthenopia.

In this and the first article mentioned no reference has been made to the fact that in vision the *vertical* lines are produced by the superimposing of image points from the *horizontal* rays upon the retina; and the *horizontal* lines by the aggregation of image-points from the *vertical* rays of light.

A CASE OF TRANSPLANTATION OF TWO SKIN FLAPS WITHOUT PEDICLE.

BY M. H. POST, M. D., ST. LOUIS.

Hannah A——, when a child had some kind of sore eyes, which, she states, got well. When ten or twelve years old she had measles, eyes became sore and here continued irritable to the present time.

When fourteen years old the eye-lashes rubbed upon the ball, threatening loss of sight, and an operation for correcting this condition was recommended and performed by a physician not residing in this city. Large pieces of skin were removed from both upper lids. Whether the lid margins were split after the Jæsche-Arlt method or not I am unable to say.

So much tissue was removed that immediately after the operation the patient was unable to close her eyes. For about two months they did well and were not painful, then they became sore and continued growing worse till she consulted Dr. John Green, of this city, nine years later, in June, 1882, at which time there was entropion with trichiasis. He performed subsection of the upper lid O. D. and O. S., which was completely successful, and the patient was placed in my care to look after the keratitis from which she was still suffering.

Though the hairs no longer rubbed, the lids could not be closed except by a strong effort, and to protect the corneæ she rolled them up under the upper lids. This was not adequate protection. The wind and dust striking against the exposed portion of the corneæ continued to increase the keratitis till the lower half was almost dermoid in appearance, while the upper portion remained comparatively clear.

After considering various plans I decided to attempt to protect the corneæ by restoring the upper lids to their normal width, by transplanting large flaps without pedicles.

The patient was sent to the St. Louis City Hospital, and after having her wait there for several weeks, and selecting a time when her health seemed to be very good, the operation was performed on O. S., Nov. 15, 1884.

The day previous I had made a careful estimate of the amount I wished to gain, and had carefully mapped out on the inside of the right arm the piece I intended to remove, the measurements of the flap being one-half greater than those of the place it was designed to fill, to allow for its contraction after it had been dissected from its underlying connective tissue.

The patient was placed under ether: An incision parallel to the margin of the upper lid, and about one mm. from the row of cilia was made. The skin was carefully dissected from the superficial fascia till the lid could easily be brought down and closed over the globe, then the margins of the lid were stitched together with silk sutures, care being taken to so place them that they should not rub upon the eye. After this the lashes of the upper lid were stuck to the lower lid by collodion, thus holding the lid as nearly immovable as possible. The operation had thus far lasted about an hour.

The next step was preparing the flap. With a knife following the ink lines previously made, the skin was cut through except along part of one side, where the cut was extended beyond the inked line in order that a pieceof skin might be included in the flap which could be held in the forceps and used as a handle and afterwards cut off lest any portion of the flap which might be contused by the forceps should be reduced in vitality and slough.

In dissecting the flap great care was taken to get nothing but the skin; to secure this, after the flap had been dissected up, it was turned over and with scissors and forceps everything looking like connective tissue was cut away.

The denuded surface on the lid was now carefully cleansed of all blood clots, the flap cut loose, conveyed to its new position and nicely moulded into place; it was necessary to trim it somewhat. Small bits of linen cut from a well-worn cambric handkerchief, 10 mm. long by 2 mm. broad, were fastened to the skin and flap with collodion, for the purpose of retaining the

flap in place instead of stitches; over the whole goldbeaters' skin was placed. This was done rapidly in order that the flap might lose as little heat as possible. As soon as the goldbeaters' skin was in place absorbent cotton wrung out from very hot water was applied and kept on for about ten minutes, and then replaced by fresh cotton wrung drier than that first used; this was covered with dry cotton, and the whole retained in position by a flannel bandage.

Both eyes were bandaged; the patient was put to bed and kept very quiet till the next day, in order to prevent vomiting from the effects of the ether; after this she was allowed to sit up as much as she desired.

The patient was carefully watched, and as her general condition was good and there was no pain in the eyelid, the original dressings were not disturbed for three days; then they were removed down to the goldbeaters' skin; a piece of this at the inner angle was clipped off, in order to allow a little pus to escape, which had collected in the conjunctival sac. A small piece of goldbeaters' skin was placed over the spot which had thus been uncovered, and the eyes were dressed with absorbent cotton and a flannel bandage.

From this time on the dressings were removed daily till Nov. 25th, twelve days after the operation, when the cotton dressings were replaced by a soft handkerchief.

The flap had taken throughout its entire extent, except a small portion at its inner extremity where it had slightly overlapped the skin. On the 28th, fifteen days after the operation, all the dressings were removed; the epidermis peeled off, leaving the flap in a healthy condition, and exposing no granulating surface. From this time only a protecting bandage was worn, which was gradually dispensed with, and the patient left the hospital March 8th, 1885.

Unfortunately, I can not state the exact time when the stitches, holding the lids together, were removed, as through some mistake a note was not made of it, or, if made, has been lost. I know that they were carefully watched and left in for about two weeks.

The operation on the other eye was not at once undertaken,

as I wished to see what would be the result of the first operation after the graft had had time to contract.

Having waited for this purpose nine months, and the result being very satisfactory, she again entered the hospital July 13th, '85, and on the 31st, having waited eighteen days to make sure that her general condition was good, the lid of O. D. was operated on. This operation did not differ essentially from the first, except that, in order to save time, the flap was dissected up by Dr. A. E. Ewing, and I depended entirely upon the goldbeaters' skin to keep the flap in place; in this I was not disappointed, as it served admirably. Ten days after the operation the stitches holding the lids together were removed.

Unfortunately, just about the time of the operation, a patient, who had been badly burned, was placed where the offensive odors from the case pervaded the ward where the patient upon whom we had operated was located. She suffered in health so much that it was necessary to prescribe tonic treatment. This condition affected the flap so that a portion, 14 mm. long by 2 mm. broad, along the upper inner margin, sloughed; it also affected the wound on the arm so that it took on a bad condition and required for its healing from July 31st to Oct. 19th, two months and a half, whereas the first was entirely healed in less than four weeks.

The difference in the two results I believe to be due to the difference in the condition of the patient, and emphasizes the importance of securing the most favorable surroundings, when undertaking any plastic operation.

In a recent case I have again operated in the manner just described; but with the difference that the transplated skin was taken from the prepuce of an infant. On the removal of the goldbeater's skin, ten days after the operation, a portion of the flap was found to have perished; the lower two-thirds of the denuded surface of the lid, however, were covered by a delicate skin tissue.

Extreme difficulty was experienced in freeing the very delicate preputial skin of all subcutaneous tissue. The result of the operation promises to be entirely successful.

WHY ASTIGMATISM OF LOW DEGREE SHOULD BE FITTED WITH DIFFERENT LENSES FOR THE NEAR POINT AND FOR DISTANT VISION.

BY F. CORNWALL, M. D., SAN FRANCISCO, CAL.

My attention was called to this subject by reading an article in the August number of this Journal by H. Culbertson, M. D., Zanesville, Ohio. He recommends (which is not new) the application of a plus cylinder in cases of myopic astigmatism of low degree, the axis being placed perpendicularly to that of the minus cylinder used for distance. The new idea he advances is that this principle applies particularly to cases of spasmodic myopic astigmatism and that of very low degree (0.25 D to 0.5 D).

I would like first to know what the doctor means by spasmodic myopic astigmatism? If he refers to spasm of accommodation producing an astigmatism, then, I should think, the spasm should be overcome by other means than by glasses; just the same as in myopia from spasm. If he means that there is a spasm of accommodation so that the emmetropic meridian becomes the myopic one, and the hypermetropic one becomes emmetropic, then it becomes a question whether the eye should be corrected in this state of spasm.

In his second paragraph he takes his own case, in which there is spasmodic myopia in the vertical meridian of 0.5 D and corrects it with a concave cylinder axis 180° for distance, and for the near point with a convex cylinder axis 90°. In a state of rest, or without the spasm, his eye would have hypermetropic astigmatism in the horizontal meridian, and hence the correction the doctor makes for the near point is the one that should be made for distance, and the eye should be educated to overcome the spasm. The correction of the astigmatism, perhaps, would be sufficient to accomplish this. It would seem to me just as wrong to correct a spasmodic astigmatism as a spasm of accom-

modation producing an artificial myopia in an emmetrope or hypermetrope. The doctor has wisely made his eye emmetropic for the near point, but for distance required it to be in a state of spasm in order that he may see with his correcting glass.

In the beginning of the third paragraph he scarcely makes it plain why it would not answer in his case to use the concave cylinder axis 90° for the near point. By placing the axis of his correcting lens perpendicularly to the one which corrects his astigmatism, he would leave the vertical meridian still myopic 0.5 D and render the horizontal (which was emmetropic) 0.5 D hypermetropic, making a case of *what is called* mixed astigmatism.

He speaks of the vertical fibres of the muscle of accommodation contracting while the horizontal ones do not. It is an accepted theory, I believe, that the circular fibres of the ciliary muscle constitute the muscle of accommodation. I fail to conceive how a *vertical* part of this elastic band surrounding the crystalline lens could contract in the vertical diameter. I cannot see how the circular fibres of the ciliary muscle may be made to contract so as change the refraction of the lens in one meridian more than in another. In order to lessen the circumference of a circular band it makes no difference whether the contraction takes place in one locality or uniformly along the course of the band (? Ed.) I must confess, however, that astigmatism does occur temporarily in some instances, and it would seem from spasm of accommodation, but how it could be explained according to the accepted theories of refraction I am not able to conjecture.

Recurring again to the subject of using a convex cylinder for reading in a case where myopic astigmatism has been corrected with a concave cylinder for distance, this we do for the same reason that we give a myope a different lens for near vision than for the distance. Some object to this, claiming when an eye is made emmetropic that it should be able to perform all the functions of a naturally emmetropic eye. I will give my reason (which may not be a new one) why a myopic eye can not, after correction, have all the adaptability of the emmetropic eye, and this will apply equally to cases of myopic astigmatism. Refer-

ring to works on histology and pathology we find the circular fibres of the ciliary muscle undeveloped in the myope while in the hypermetropic eye there is an excess of development. The reason for this is manifest, *viz.*, that in the myope there is no accommodation required—even at the near point—and consequently there is no development of these circular fibres. Now, in a case of myopic astigmatism the patient will adjust the eye for distance for the emmetropic meridian, but for the near point will adjust for the myopic meridian. The reason for this is plain. Of a necessity the eye will adjust for the emmetropic meridian for distance, as this leaves the eye in a state of rest and at the same time secures the best vision, but for the near point the myopic meridian is chosen because less accommodation is required and objects are equally distinct. This being the case, the muscle of accommodation remains undeveloped above the point required of it to adjust for the myopic meridian. In a case of 2. D of myopic astigmatism the patient places objects at the same distance, and uses the same amount of accommodation as the myope does at this point. We will suppose a case of — 1.5 D of astigmatism; correct the myopic meridian for distance making the eye emmetropic, but for the near point, for reasons already given, a convex cylinder may be used, axis perpendicular to the axis of the concave cylinder used to correct for distance, and a most satisfactory result will be obtained in almost every case. This leaves the eye myopic 1.5 D, but as we know a myope of this degree has the advantage for near work. In very young people whose muscles of accommodation, it would seem, might be susceptible of cultivation one dioptry of myopia is as much should be left for the near point, and this should be modified by the degree of astigmatism, but in presbyopia the plane of the reversing axis in cases of myopic astigmatism can be carried to a sufficient degree to correct the presbyopia.

My observation is that those who corrrect myopic astigmatism the same for the near point as for distance have a bad success in practice.

A CASE OF CHOROIDITIS FOLLOWING TYPHOID FEVER.

BY F. C. HOTZ, M. D., CHICAGO, ILLS.

Among the affections of the eye which have been observed as sequelæ of typhoid fever, we find recorded[1] only corneal ulcers and abscesses; disturbances in the muscular apparatus (paresis of accommodation and sphincter pupillæ and paralysis of one or the other of the external muscles of the eyeball); and affections of the optic nerve (transitory blindness without any manifest changes in the fundus, and atrophy of the optic nerve). It will be noticed this list does not mention any affections of the uveal tract; and this apparent immunity of the choroid to the effects of typhoid fever appears very remarkable if we consider the fact that other acute infectious diseases have been known at times to cause serious disturbances in this tunic.

Cerebro-spinal menigitis, for instance, has occasionally been followed by choroiditis with a plastic exudation into the vitreous resulting in partial atrophy of the globe. And *relapsing fevers* (febris recurrens) have sometimes been observed to cause an inflammation of the anterior portion of the uveal tract (cyclitis and iritis) with opacities in the vitreous, deposits upon Descemet's membrane, and posterior synechiæ; but no visible changes in fundus.

That similar disturbances may occur also in the course of typhoid fever the following case shows in which the choroiditis became manifest during the reconvalescence of the patient from a severe attack of typhoid fever. The case is interesting also for the rapid improvement which followed upon the hypodermic injections of pilocarpine.

Jan. 13, a farmer, aged 26 years, the picture of a healthy ro-

1 Graefe—Saemisch, Handbuch vol. VII, p. 167.

bust young man, consulted me in regard to his left eye. In October he had a very severe attack of typhoid fever, and during reconvalescence he noticed the sight of his left eye, which prior to his illness he is positive was as good as the right eye, was gradually failing and finally became entirely obscured. He never had any other disease, and is absolutely free from syphilitic taint.

Status præsens. R. E. V=$\frac{20}{XX}$, Em. normal fundus. L. E. counting fingers at 12 feet; no pain, no tenderness, no redness; cornea aqueous humor and lens clear; pupil slightly enlarged (no mydriatic having been used.) Tn. In the vitreous numerous floating opacities; still the fundus could be illuminated sufficiently to discover a large whitish exudation in the periphery of the superior nasal section of the fundus.

The patient not prepared to stay in the city at once, was given Pot. Iod. five grs., three times *pro die.*

He returned February 5. While at home, the eye became inflamed, the inflammation (evidently iritis) lasting two weeks. I found upon the anterior capsule of the lens a circle of brown pigment dots just outlining the size of the pupil as it was found on the first examination. Now the pupil was still larger; and the vitreous was clouded up so densely that the ophthalmoscope yielded but a very faint reddish—gray reflex and the sight was reduced to barely counting fingers at one foot.

I now prevailed upon the patient to stay and submit to a course of hypodermic injections of pilocarpine. Each injection of $\frac{1}{6}$ gr. produced a profuse perspiration and copious secretion of saliva for over one hour.

After five injections administered in one week the vitreous was considerably clearer and V had risen to $\frac{20}{L}$; but the patient felt so weakened by the treatment that he insisted on a short intermission.

During this intermission, however, the sight grew rapidly worse and in one week (February 20) sank to $\frac{20}{C}$; Descemet's membrane became dusty and the vitreous very muddy again.

Pilocarpine was again injected with happy result; in one week V was again $\frac{20}{L}$; the vitreous was cleared and the ophthalmoscope distinctly showed a number of disseminated white patches in the upper nasal section of the choroid.

From that time on (February 27), the eye continued to improve; March 28, very few small opacities in the vitreous, $V=\frac{20}{XXX}$; and May 21 $V=\frac{20}{XX}$; vitreous clear; in the upper nasal periphery of the fundus numerous small spots of choroidal atrophy.

TRANSLATION.

In the *Archives d'Ophtalmologie* Professor Badal has published an article "on the total extirpation of the lachrymal gland" which is of special interest, since the author relates in it a case in which he was enabled to see the orifices of the ducts of the lachrymal gland proper and of the accessory (palpebral) lobules and to study the function of these glands. The patient having been stung by an insect, had lost most of the tissues surrounding the orbit by gangrene, and an ectropion had resulted which laid bare the conjunctival orifices of the excretory ducts coming from the lachrymal glands.

The paper ends with the following conclusions:

1. The orbital portion of the lachrymal gland is by its fibrous capsule perfectly isolated from the palpebral portion; its complete removal presents no serious difficulty and causes no danger to the person thus operated upon.

2. There is nothing more difficult than the total removal of the lobules of the accessory portion, which are disseminated and —so to speak—lost in the depth of the lid.

3. The removal of the orbital portion has no disagreeable influence on the lubrification of the eye, which simply can no longer shed tears.

4. It is possible that this portion of the gland has the exclusive function to secrete the tears proper. Its action would then simply be due to the influence of moral or physical causes which provoke *tears*.

5. The accessory gland would then have the duty to help the other palpebral glands in the lubrification of the eye. Its permanent and regular secretions would be little or not modified at all by the excitations which bring about the secretion of the orbital gland.

If this hypothesis, which is furthermore strengthened by a certain number of facts, would prove to be correct, the portion

of the gland which, almost contemptuously, is called the *accessory* portion, would in reality be the *lachrymal* gland proper and not play a secondary role.

6. The excretory canals of the orbital and palpebral portions together are, at least in certain subjects, much more numerous than is usually admitted by the modern authors. The extreme difficulty which is experienced in demonstrating these canals on the dead body is perhaps the cause that some of them have escaped detection.

7. It is certain that at least a part of the canals coming from the orbital gland are not joined by those coming from the palpebral portion.

8. The removal of the palpebral portion of the gland might be attempted, when the removal of the orbital gland would not suffice to heal a disagreeable *stillicidium*. However, the possibility that the lubrification of the eye would be interfered with by this operation must be dreaded.

9. The simplest way to search for the palpebral lobules is by making an incision along the outer third of the orbital arch and prolonging it a little below the palpebral commissure.

10. In cases of incurable ectropium with abundant stillicidium, the removal of both portions of the gland might be performed in one session and by the same incision, starting from the middle of the orbital margin and reaching the outer commissure.

REPORT OF THE OPHTHALMOLOGICAL SOCIETY OF HEIDELBERG, GERMANY.

(Translated from the report of A. M. Montprofit, *Archives d' Ophtalmologie*).

September 15th.

The meeting was opened by Prof. Zehender, of Rostock.

The prizes offered by the Ophthalmological Society were then awarded: The Græfe prize (a gold medal) was unanimously given to Prof. Helmholtz. The prize founded by Welz for the best article published during two years in Græfe's Archives was

awarded to Dr. Samelsohn, of Cologne, on account of his article on central scotoma and retrobulbar neuritis.

Professsor Leber, of Gœttingen, then took the chair.

First Communication.—Dr. Landolt, of Paris: On the Insufficiency of Convergence. Having referred with a few words to the definition of the range of convergence, the principles and methods of measuring it, the author came to the interesting subject of his paper, the insufficiency of this function, the frequent cause of asthenopia.

According to him there are two forms of insufficiency of convergence which must well be distinguished from each other: 1. The muscular insufficiency proper, due to the weakness of the internal recti muscles, to their unfavorable insertion, or to the preponderance of their antagonists. 2. A neurasthenic insufficiency of convergence, from a central cause due to an obstacle to innervation, a lesion of the center of convergence. In the first case, the field of binocular fixation, as well as the monocular fields are more or less limited; in the second case, the excursions of each eye may be normal, but the range of convergence is considerably restricted. But the difference between the two forms of muscular asthenopia is especially pronounced by the effect of the operations of tenotomy and of advancement. In the purely muscular insufficiency these operations, when properly executed and dosed (the author gave here the indications), cannot only improve the asthenopia, but even increase the range of convergence. On the contrary, in the neuropathic insufficiency, their result is almost always insufficient, often nil, even decidedly bad. The author proved his opinions by observations of the different forms on some very characteristic asthenopic patients, which before and after the operation had been examined by his method of examination. Finally, he explained what might be termed the relative insufficiency of convergence (or of accommodation), *viz.*, the condition in which both these functions are normal but where there is an obstacle to their joint action. This can easily be recognized and valued by the aid of the author's dynamometer, and is usually cured by correcting glasses.

Second Communication. Professor Sattler, of Erlangen, read a paper on *The Infectious Germs Found in the Secretions*

of the Lachrymal Sac and Their Resistance to Antiseptics. He had examined the secretions of twenty-eight lachrymal sacs. He collected the fluid with an instrument made of platinum, heated and sterilized and spread it on gelatine. After twenty-four hours he observed the development of isolated cultures. He found a large number of different species of germs. The pyococcus filogenus, presenting two varieties, one white, one orange, forms about eighty per cent. of the germs; this is but little malignant. The streptococcus pyogenus has never been met with; but he has several times found some staphylococci which seem to be the cause of those infectious forms of keratitis, which become rapidly complicated by iritis. He further found the pneumococcus. He has distinguished six different species of bacteria, one of which showed spores. The author then spoke of his researches concerning antiseptics and their action on different organisms; a solution of corrosive sublimate 1 in 10,000 is insufficient; the corrosive sublimate, one in 5,000, is, however, sufficient to insure antisepsis, as for instance in cataract operations. He spoke of the practice of Professor Panas of Paris, who uses hydrargryum bijodatum, one in 20,000, but stated that it was impossible to obtain such a solution, the most concentrated solution of this drug being one in 30,000 and then insufficient for antisepsis; he added further that by dissolving the hydargyrum bijodatum in a solution of the bichloratum of one in 5,000, a fluid of very powerful antiseptic properties will be obtained.

Third Communication. Prof. Zehender, of Rostock, studied *the Effect Produced by the Refraction of Lenses, when the Rays of Light Fall Obliquely on the Lenses.* There results a particular defformity of the images, which varies when a screen is put in front of or behind the focal space. He demonstrated the fact on his apparatus and by means of a number of photographs. Mr. Zehender stated that the astigmatismus, due to an inclination of a spherical lens, can always be corrected by a cylindrical lens properly placed; he thinks that the poor visual acuity of many eyes after cataract extraction is due to an error in the sphericity caused by the correcting glasses, and since he obtains the least error in the sphericity when (in his apparatus) the plane surface of a plano-convex lens is turned toward the screen,

he proposes for those operated on for cataract to use spectacles composed of two plano-convex lenses, put together with their convex surfaces.

Dr. Landolt remarked that this proposition has already been made by Donders in his first edition.

Fourth Communication. Dr. Stilling, of Strassburg. On the Genesis of Glaucoma and on the Conditions of Filtration in Glaucomatous Eyes. He considers the experiments with potassium ferrocyanicum to be insufficient; those made with fluorescine are not much more conclusive. These fluids do not impregnate the vitreous body in an equal manner in all its parts, and can on the other hand get in between choroid and retina. In the normal condition the phenomena of filtration are seen only by way of the sheath of the optic nerve, as there exists no anatomical communication between the vitreous body and the anterior chamber. When the optic nerve is cut and, after its ocular end has been ligated, the fluorescine is injected subcutaneously, the optic nerve shows its green color. The younger the eye, the more active the filtration; a young eye in twenty-four hours filters three times more than its volume; the filtration diminishes with the age. An eye conserved in Mueller's fluid filters much more than a fresh one. The glaucomatous eye, however, always filters less, also when conserved in Mueller's fluid. Dr. Stilling considers glaucoma to be an increase of intra-ocular pressure due to a diminution of filtration. This diminution of filtration of the eye is due to anatomical changes which have their seat especially in the seat of the optic nerve. The glaucomatous eye is a senile eye. The author speaks of—not a comparison, nor an analogy —but a simple similarity between the glaucomatous eye and the senile prostatic gland. In both organs the accidents due to the alteration, so very different from an anatomical point of view, are subject to occasional causes, as for instance, a cold, which is the most important one.

Fifth Communication. Professor Brettauer, of Triest, made a very interesting communication on *Three Cases of Spontaneous Clearing up of Senile Cataracts, Without Capsular Lesion, and with Returning Vision.* For these three cases the process took from nine to thirteen years, and the resorption of the cataract

was accompanied by the formation of numerous crystals of cholesterine. Sight was perfectly re-established in these patients by convex glasses, as those operated upon for cataract need them. The vitreous remained clear in all of these cases. One of the patients comes from a family in which six cataracts have been removed, and had been himself operated upon on the fellow eye at the age of 48 years.

Professor Becker, of Heidelberg, stated that he had seen Brettauer's cases and was perfectly of his opinion regarding them. He declared that before having seen these cases he would have considered the thing impossible, but last year he had seen a simlar case himself.

Prof. Berlin, of Stuttgart, has also seen such a case; Dr. Dufour, of Laussanne, had also had one similar case with the formation of numerous tablets of cholesterine.

Dr. Meyer, of Paris, called attention to the fact that these were not cases of clearing up of cataractous lenses, but simply of resorption of the lens.

Sixth Communication. Dr. Nordensohn on the Pathological Anatomy of the Essential Detachment of the Retina. Nordensohn supported Leber's theory; he drew special attention to the rupture of the retina and strengthened his opinion by remarkable microscopical preparations and drawings. These observations were made on enucleated eyes, especially on three myopic eyes of 3, 6 and 8 D. He thought the train of phenomena preceding, accompanying and following the esssential detachment of the retina was the following; there primarily a choroiditis; in consequence of this choroiditis adhesions are formed between choroid and retina; later on a subretinal fluid is formed, which, when collected in one special region, there destroys the adhesion between choroid and retina. The vitreous body now becomes retracted as the result of trophic changes due to the choroiditis; when this retraction has reached a certain degree, the subretinal fluid is the more increased in quantity; finally, it ruptures the retina and the edges of this rupture are regularly turned inwards toward the vitreous body. This subretinal fluid may even enter the anterior chamber, which then appears deeper, and the iris is tilted backwards; on the other hand, the vitreous partially pene-

trates behind the detached retina and again increases its detach ment.

This is the mechanism as described by Nordensohn. He dwelled most especially on the turning backwards of the edges of the ruptured retina, and showed this plainly in several of his specimens and drawings. He found the rupture of the retina to be present in all cases. * * * * The role which the spasm of the accommodation may play in the detachment of the retina was also mentioned by Nordensohn.

Seventh Communication. Dr. Hoffmann on Hypopyon-keratitis and the Formation of the Hypopyon. Around an irritated or diseased point of the cornea vacuoles are seen to be formed and serrated cells put in appearance. This point then has apparently some attraction for the leucocytes, which come in large numbers through the periphery of the anterior chamber. These cells are then found to be very numerous between Decemet's membrane and the corneal tissue proper, although there is no perforation of this membrane.

Professor Horner, of Zuerich, said that according to Backova's and Landolt's studies the production of the hypopyon was somewhat different, the pus being formed on the level of the ulcer, Descemet's membrane is perforated on the same level, and the pus then falls down and is collected in the lowest part of the anterior chamber.

Demonstration.

Dr. Schoenmann showed a patient who had for two years had a paralytic ptosis; the doctor had performed the advancement of the levator palpebræ superior is with complete success, the scar being scarcely visible.

Professor Kuhn, of Jena, showed microscopical specimens of an ulcer healed by the transplantation of a conjunctival flap, the patient having died of an intercurrent disease. A short time after the transplantation, the formerly considerable pain had disappeared.

Dr. H. Virchow showed anatomical and microscopical specimens concerning the ciliary body and its folds; he gave the results of his researches with regard to the structure of the vitre-

ous body. Squeezing the vitreous body hard in a fine linen cloth, drives out all the liquid parts and round fibres of marked resistance are found, which are even capable of bearing a considerble weight.

Dr. Nordensohn exhibited specimens showing the retraction of the vitreous body.

Professor Arlt asked whether Nordensohn regarded the retraction of the vitreous body as a primary phenomenon.

Nordensohn did not consider it as such, but thought it to be consecutive to the choroiditis.

Dr. H. Virchow remarked that the use of Mueller's fluid for hardening the eyes can give rise to grave errors in the study of the detachment of the retina, since it often produces detachment. He prefers corrosive sublimate for hardening.

Dr. Eversbusch described the method of hardening eyes by means of a concentrated solution of corrosive sublimate. First, the eye is washed in corrosive sublimate solution one in 5,000; then it is put into a saturated solution for half or three quarters of an hour; after this the eye is immersed into diluted alcohol of 60°, to which is added so much of the tincture of iodine that it ceases to become discolored. When this is done the eye is put first into diluted and then into absolute alcohol.

Dr. Nieden showed a registering perimeter which enables the examiner to register the results of the examination on a schematic tracing. This perimeter is called Hardy's perimeter, manufactured at London, by Picard & Curry.

Dr. Jany showed an electro-magnet for the extraction of metallic foreign bodies. This magnet is very voluminous, apparently little manageable and requires a rather strong battery.

Dr. Landolt presented his muscular dynamometer and his blepharostat, which the readers of the *Archives* know from the description he has given. He showed, furthermore, a new fixation forceps destined to hold the muscle which is to be tenotomized. He does not use the hook to catch the muscle, but grasps it directly with the forceps.

September 16th.

Eighth Communication. Dr. Wolfsberg, of Berlin, made a

report on *the Diagnostic Value of the Examination of the Color-Sense*, and showed an apparatus for the examination of the central and the peripheral light sense. He tried to determine the reciprocal relation between the light-sense, the color-sense and the visual acuity, and the variations which these relations undergo under the influence of various degrees of illumination and of the diseases of the eye.

Ninth Communication. Professor Becker, of Heidelberg, presented some artificial eyes from the factory of Mueller, of Wiesbaden, and gave some details concerning the mode of their fabrication. He then showed how to draw a schematic eye for theoretical demonstrations.

Tenth Communication. Professor Pflueger, of Bern: How can Certain Symptoms of Glaucoma be Explained by the Theory of Increased Intra-Ocular Pressure. He was not satisfied that the increased intra-ocular pressure is the predominating symptom, and he dwelled especially on the following three points:

1. The glaucomatous halo is not caused by an atrophy, due to an increased pressure, but to the presence of an exudation, which the author has found between choroid and retina.

2. The coming and going of the central and paracentral scotoma without any therapeutic interference.

3. There are cases of glaucoma with a complete loss of sight, where no excavation is found.

Eleventh Communication. Dr. Kundt spoke, too, of the *Pathological Anatomy of Glaucoma.* He had the same opinion about the nature of the halo. He thinks its formation is due to an exudation. He has been able to prove this to be the fact by the examination of eyes which had been observed during life. According to him there is a distinction between the complete halo and the growing atrophic halo of the choroid, which is a senile phenomenon. Just where the halo is, he found a characteristic exudation between choroid and retina. He found this exudation in all glaucomatous eyes which he had occasion to examine. By the formation of this very exudation he thought we can explain the rapid variations of the field of vision, the scotomata that come on and disappear. The choroid seems very thin, its outer layers are compact; they may even adhere to the

sclerotic around the optic nerve entrance, and sometimes even as far as the equator of the eye. There is, then, no longer any subchoroidal space. All the blood vessels show alterations, their caliber is reduced to one-seventh to one-tenth; the arteries present the lesion of endarteritis, periarteritis and mesoarteritis; the walls of the veins are very thick, the connective tissue is hyperplastic. In these glaucomatous eyes we find, furthermore, senile changes of the choroid, the retina, the ciliary body, new formation of blood-vessels, formation of pigment, etc. The lymph fluid seems chemically altered; it actually here and there obstructs the lymphatic vessels.

Twelfth Communication. Professor Manz, of Freiburg: Acute Attack of Glaucoma after the Instillation of Cocaine.—The action of cocaine upon the pressure is variable. In some cases it is followed by a pronounced diminution of pressure, often even by such a considerable diminution that it may be called a collapse. Manz has seen one such case. In other cases an increase of pressure is produced. In one case Manz has seen an acute attack of glaucoma being produced by *one drop of cocaine* (cured by iridectomy); the patient had suffered from the prodromal symptoms of glaucoma, and it may, therefore, be doubted that the acute attack was due to the cocaine.

Thirteenth Communication. Dr. Hoeltzke on Researches Concerning the Intra-Ocular Pressure. (Our readers will find the particulars of this paper in our last number.—EDITOR.)

Professor Pflueger thought that atropine does not cause an increase of intra-ocular pressure.

Dr. H. Virchow stated that from an anatomatical view there is no difference between the eye of a dog and that of a cat. It is therefore rather strange not to vindicate to the latter the faculty of accommodation, since the experiments concerning accommodation, made by Voelkers and Hensen, and on which our theories of the mechanism of accommodation are based, were made on dog's eyes.

Professor Sattler objected to the statements made concerning the reduction in thickness of the choroid in glaucomatous eyes, and said that this could only happen after a very prolonged period; in the beginning the choroid, on the contrary, being considerably swollen.

Prof. Leber, in giving his experiences with apomorphia, stated that he had obtained but a momentary insensibility of the cornea with this drug; but aside from the insufficiency of this agent, it presents another inconvenience by causing nausea, if an active dose is used. It is, therefore, not valuable as an anesthetic and cannot supplant cocaine.

Fourteenth Communication. Dr. Weiss, on the First Modifications which Myopic Eyes Undergo. He described the arch-like reflex which is often seen in myopic eyes to be situated on the inner side of the papilla. In 1,094 eyes it was found 415 times, 38 per cent. Weiss thought this reflex was due to an elevation caused by exudation. If the myopia increases, this exudation increases also; the crest formed by its highest point disappears gradually and the surface, now plane, no longer favors the formation of the reflex, which then vanishes. Drawings and anatomical specimens were shown. The author then spoke of the length of the optic nerve in myopic eyes, and stated that it is always reduced, and that this shortness causes a difficulty in converging, and thus the eyeball is bent in. These differences in the length and curvature of the optic nerve have been found in more than forty autopsies.

Professor Schmidt-Rimpler criticised very justly the uninte - gent way in which the Prussian government had the statistics prepared concerning the myopia in schools and gymnasiums without taking into account the age and heredity. These conditions must be observed in rational statistics. The heredity is especially well known to play an important role in it; this is nothing new; at Frankfort 32 per cent. of myopes were found in two gymnasia, and in 75 or 76 per cent. of these cases heredity existed. The high degrees of myopia (6 D) are somewhat more frequent in the higher classes.

September 16th. Evening Session.

Fifteenth Communication. Dr. Schubert, of Nuernberg, made a communication concerning *the Position of the Head During Writing*; he showed the importance of such studies on children, and counsels to use the right-handed method, and to place the paper straight before the head of the child without any

lateral inclination. The author thought that formerly this was the method most employed; he held that this idea was borne out by examining very old manuscripts in the library of the city of Nuernberg, and of which he passed around the photographs. In these manuscripts the letters are really perfectly vertical, but several members thought that these manuscripts were actually pieces of caligraphy, and that they are, therefore, written under circumstances which do not allow us to attribute to them so much importance as Dr. Schubert would like to.

Sixteenth Communication. *Dr. Vossius* speaks of *the Operative Treatment of Trachoma*, and advocates especially the excision of the conjunctival fornix, which has given him good results.

Dr. Coninck, of Amsterdam, has found trachoma to exist extremely frequently among the poor sick of the city of Amsterdam. He has, furthermore, noted it to be more frequent among the Jews than among the Christians. This fact is more visible in the schools; in the Jewish schools the trachoma is found in 75 per cent. of all the eye diseases. It is very remarkable that trachoma is also met with more frequently in married than in unmarried women of the same age. This fact the author attributes to the more frequent occasions for taking cold, to which the Jewish women are exposed, on account of the monthly baths prescribed by the Jewish law; this opinion, although original, may be disputed.

Seventeenth Communication. *Dr. Meyer* reported *an Interesting Case of Anomalous Condition of the Ophthalmic Artery.* The eye of a very weak, young and very cachectic child was removed on account of grave inflammatory lesions. During and after the operation more arterial blood was lost than is usual. The hæmorrhage was, however, stopped. Four days afterwards the child died from acute general tuberculosis. The post mortem showed that there existed the following anomaly of the ophthalmic artery. The artery was much smaller than ordinarily; instead of reaching the optic nerve from above, it reached it from below; finally, the branches which usually spring from the ophthalmic artery, originated in this case from a comparatively large branch of the middle meningeal artery and entered the

orbit through the sphenoidal fissure. A lesion of this artery caused the abundant hæmorrhage which followed the operation.

Eighteenth Communication. *Dr. Cross, of Bristol*, reported a case of *Removal of a Tumor from the Orbital Cavity*, which gave rise to an abundant hæmorrhage. He was obliged to make the ligation of the common carotid artery. The patient recovered. The histological nature of the tumor had not yet been determined, and it was, therefore, impossible to give a prognosis. The interesting point was the immediate stopping of the hæmorrhage when the carotid artery had been tied.

Nineteenth Communication. Prof. Knapp, of New York, made the following communications:

1. On a dim, grayish discoloration around the optic papilla of congenital origin. Knapp has seen two such cases concerning children of a strumous habit, weak and suffering from nystagmus might be found comparatively frequently.

2. On embolism of the central retinal artery, in which the branches of the macula lutea remained free. Two cases were related.

3. On the healing of a hyaline infiltration of the conjunctiva by electrolysis. Knapp considers this hyaline infiltration to be the first stage of an amyloid degeneration.

4. On the destruction of a vascular tumor of the episcleral tissue by means of cauterization.

CORRESPONDENCE.

DEAR DOCTOR:—I noticed an error of mine in my paper which should be corrected. See August number American Journal Ophthalmology, p. 184. Strike out in line second and third the words, "having been prevented by the negative cylinder from receding to j;" and in the second line, after "plane," make the comma a period.

Very respectfully,

H. CULBERTSON

Zanesville, Ohio.

DEAR DOCTOR:—I would suggest publishing this query in the next issue of the JOURNAL OF OPHTHALMOLOGY:

Yours respectfully,

F. F. C. VAN ALLEN.

I would ask Mr. L. Webster Fox if he would kindly explain the manner of grinding spher. + 10D ⌒ cyl. + 3D, axis 180°, ⌒ cyl. + 2 D, axis 50°, in ONE? I think an explanation would be of great interest to ophthalmologists and opticians.

Respectfully. F. F. C. VAN ALLEN.

Albany, New York.